

Intel® Itanium® Architecture

***Delivering Value for the Most
Demanding Enterprise & Technical
Computing Applications***

Evžen Pavlovský

Intel

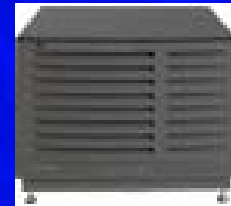
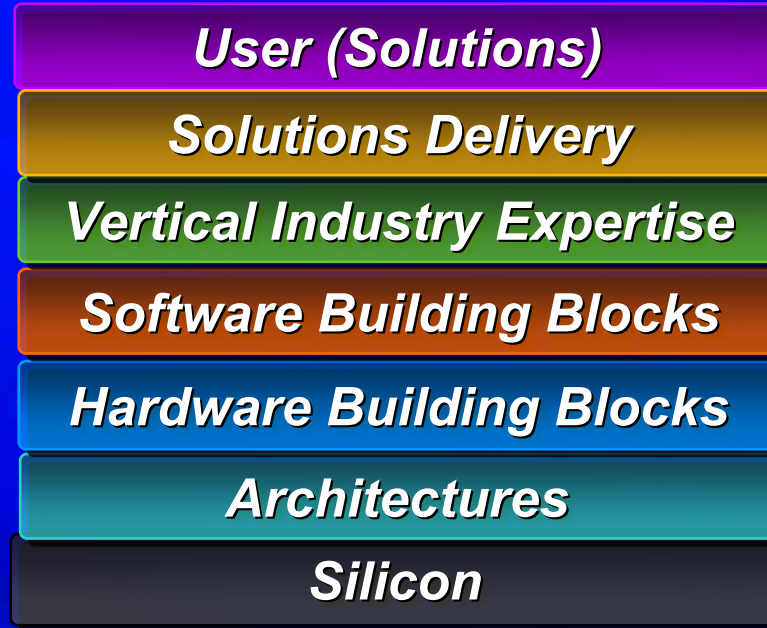
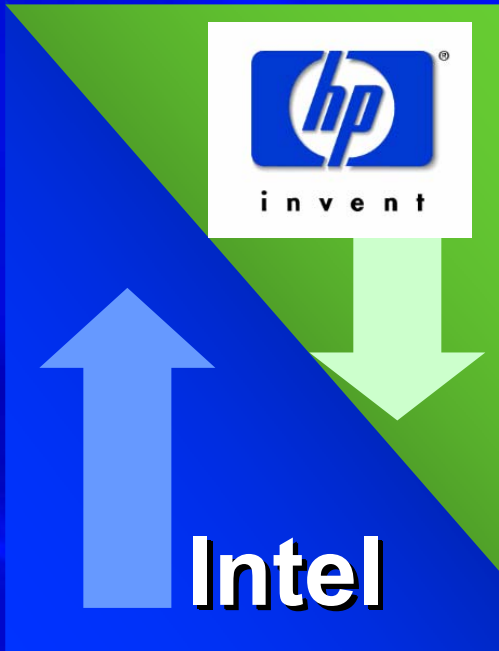


Agenda

- Key Messages
- Platform Positioning
- Product Roadmap
- Industry & Ecosystem Momentum



Intel/ HP Collaboration



Technical & Business Collaboration



Evolving Server Platforms

Current architecture or solutions

RISC
architecture
e.g. Database,
ERP, BI, HPC



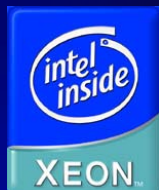
Transition benefits

Outstanding performance
with choice of OS and
vendor today

Architecture of choice



*Premier performance, reliability and
scalability 64-bit architecture*



IA-32
architecture



Extended memory
capability when needed

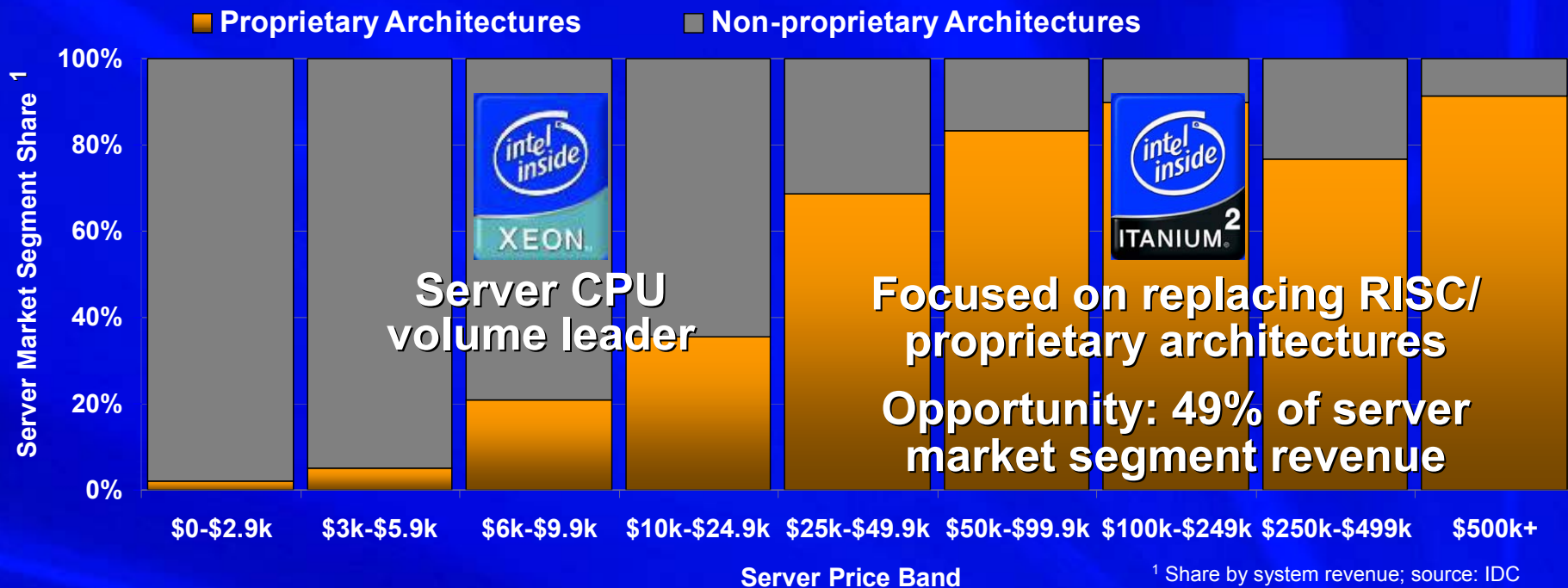


*IA-32 architecture with 64 addressability
Broadest range of 32bit apps*



Architectural Choice & Flexibility

Server Architectural Market Targets



High availability

Price/performance

Scale-out

Broadest SW availability

Market
Segment
Requirements

Highest reliability & availability

Highest performance

Scale-up

Robust enterprise solutions

Itanium® architecture delivers performance and reliability for high end server market segment



Itanium® Architecture Positioning

Focused on the applications typically served by RISC, targeting:

- General RISC migration (2-512P+)
- Large SMP/mainframe-class
- High performance computing (HPC)



Leading capabilities in Intel's server product line

- **Higher performance & scalability driven by core architectural differences, e.g.**
 - EPIC technology
 - Massive on die resources
- **Greater RAS capabilities**
 - Supports 99.99999% uptime¹
 - Machine Check Architecture, bad data containment, cache reliability,...
- **Offered in high end systems**
 - Up to 512-processor systems
 - With innovative RAS, management, & other platform features



Cost effective alternative to proprietary RISC

- **Outstanding price/performance**
 - Top TPC-C performance on Linux*, Windows*, & SQL*²
 - Huge advance in performance & platform features coming on Montecito
- **Greater choice**
 - System vendors
 - Operating systems
 - Software applications
 - Continued strong ecosystem growth

¹ Source: www.hp.com

² Source: tpc.org

Focused on replacing RISC, complementary to Intel® Xeon™ processor



Product plans, descriptions, and dates are estimates only and subject to change without notice.

*Other names and brands may be claimed as the property of others.

Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information on performance tests and on the performance of Intel products, reference www.intel.com/procs/perf/limits.htm or call (U.S.) 1-800-628-8686 or 1-916-356-3104



Proven for Demanding Workloads

| Segment | End User Examples | Itanium® Architecture Value |
|------------------------------|--|---|
| Database | <ul style="list-style-type: none">▪ First Trust▪ Weather Channel▪ Jet Blue Airways | <ul style="list-style-type: none">▪ OLTP performance▪ Cost effectiveness/ consolidation▪ High reliability & availability▪ Non-proprietary solution |
| ERP/ SCM | <ul style="list-style-type: none">▪ CompUSA▪ Multiyork▪ Telefonica Argentina | <ul style="list-style-type: none">▪ Cost effectiveness/ consolidation▪ OLTP performance▪ Non-proprietary solution |
| Business Intelligence | <ul style="list-style-type: none">▪ American Healthways▪ CISER (Cornell)▪ Premera Blue Cross | <ul style="list-style-type: none">▪ OLTP & analytics performance▪ Application choice▪ Huge on-die cache for large workloads |
| HPC | <ul style="list-style-type: none">▪ BP▪ Proctor & Gamble▪ NASA▪ Total Oil | <ul style="list-style-type: none">▪ Sustained FP performance▪ Standards-based/ open source solutions▪ Support for fast deployment▪ Huge on-die cache for large data sets |

To see case studies and testimonials: intel.com/business/casestudies/prodserv/index.htm



Very strong Itanium architecture value proposition in database, ERP/ SCM, business intelligence, & HPC



Platform Technologies = New Capabilities

IT VALUE

MANAGEABILITY

Stable, reliable platforms
Migration & Legacy Support
Diagnostics & Asset Management

I/O ACCELERATION

Data Movement Engines
IA Tuned Software
Edge Device Acceleration

SECURITY

Protect information
Reduce attacks
Rights management

I/O AT

iAMT

LT

**HT
EM64T**

COLLABORATION

Communication
Data sharing
Multi-tasking

VT

VIRTUALIZATION

One HW platform functions as multiple "virtual" platforms
Multiple OSs share HW
OS & Apps run without modifications

***Ts**

**LINE of
BUSINESS
VALUE**

Developing Platform Technologies to Deliver Valued Performance and Features





Intel® Itanium® Processor Family Roadmap

Optimized for *Enterprise*

| | | | | |
|---|---|--|-------------------------------------|-------------------------------------|
| Itanium® 2 Processor (Madison 9M) <i>1.6 GHz, 9M, faster FSB</i> | Montecito <i>Dual core, 24MB, HT Technology</i> | Montvale <i>Dual core, HT Technology</i> | Tukwila <i>Multi-core</i> | Poulson <i>Multi-core</i> |
|---|---|--|-------------------------------------|-------------------------------------|

Optimized for *High Performance Computing*

| | | | | |
|--|--|---|--|---------------------------------------|
| Itanium® 2 Processor (Fanwood) <i>1.6 GHz, 3M, faster FSB</i> | Montecito <i>HPC Optimized</i> | Montvale <i>HPC Optimized</i> | Tukwila/ Dimona <i>HPC Optimized</i> | Future <i>HPC Optimized</i> |
|--|--|---|--|---------------------------------------|

Optimized for *Low Power/ High Density*

| | | | | |
|--|---|--|--|-------------------------------------|
| LV Itanium® 2 Processor (LV Fanwood) <i>1.3 GHz, 3M</i> | LV Montecito <i>Low Voltage</i> | LV Montvale <i>Low Voltage</i> | LV Dimona <i>Low Voltage</i> | Future <i>Low Voltage</i> |
|--|---|--|--|-------------------------------------|

2005

2006

2007

2008

Future

New Technologies

- Dual core
- Hyper-Threading Technology
- Intel® Virtualization Technology
- Cache reliability (Pellston)
- Enhanced data integrity (Lockstep)

- Multi-core
- Common platform architecture with Intel® Xeon™ processor MP
- Enhanced RAS
- Enhanced virtualization
- Enhanced I/O & memory



All products, dates, comparisons, and information are preliminary and subject to change without notice.



What's Next for High End Computing

Innovation

Ecosystem Enabling

Industry Momentum



Future Itanium® 2 processor

Montecito

Delivering new capabilities for high end computing – reliable, cost-effective, power efficient performance

Breakthrough performance
Innovative platform features
Greater power efficiency¹

Large application base
Complete solution stacks
Wide choice of OS and hardware

Growing end user adoption fuels increased innovation and solution availability

Next generation Itanium® 2 processor will deliver the benefits of years of investment

¹ Comparison refers to Montecito relative to the current generation Itanium 2 processor.
All products, dates, comparisons, and information are preliminary and subject to change without notice.





Delivering Leading Performance

4P Linpack HPC

64%

IBM Power5
1.9GHz

Montecito

OLTP

20%

IBM Power5+
2.4GHz

Montecito



1. **Source for Linpack:** As of 08/08/2005 Intel Corporation. System Configuration: Intel Server Platform SR870BN4 using four Montecito Itanium 2 processors 1.6GHz/18MB. **Source for IBM Power5:** IBM Corporation, Result posted to http://www-1.ibm.com/servers/eserver/pseries/hardware/system_perf.pdf. 2. **Source for OLTP:** Intel Corporation. All projections based on Intel estimates for IBM Power5+ 2.4GHz using 128GB of memory. Montecito (using 128GB of memory) forecasted production target using online transaction processing (OLTP) workload testing at Intel. **Source:** Intel Corporation Projections and technical specifications are based on internal analysis and subject to change. All dates and products specified are for planning purposes only and are subject to change.



Itanium® Architecture – Used by the World's Leading Corporations

Deployed by the
Top 6 Automotive
companies, & **8 of the top 10**

★Toyota ★Hyundai
★DaimlerChrysler
★Volkswagen Fiat
★BMW Volvo
Audi Pirelli

Deployed by the
Top Insurance
company, & **2 of the top 3**

★ING CNA

Deployed by **2 of the top 3**
Consumer Goods
companies

Fuji Film
★Proctor & Gamble

Deployed by **7 of the top 8**
Computer & Electronics

★HP companies ★NEC
★Samsung ★Fujitsu Intel

**Over half the world's
100 largest corporations
run Itanium 2-based
systems**

★ Represents Global 100 company

Deployed by the
Top Financial Services
company, & **5 of the top 9**

CitiStreet Commerzbank
NASDAQ Bank of New York
Thompson Financial

Deployed by the
Top 5 Energy
companies, & **8 of the top 10**

★BP Marathon Oil
★Total ★PetroChina

Deployed by **3 of the top 6**
Healthcare companies

★Pfizer Merck
Blue Cross/ Blue Shield
Premera Blue Cross

Deployed by the
4th largest Telecom
company

Motorola
Korea Telecom
Telefónica Argentina
Telecom Italia

² Source: Intel Corporation, 9/05, statistics based on Fortune* Global 100 ranking of largest companies.



Industry leaders rely on Itanium architecture

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Broad Ecosystem Support

Application Choice



- >3600 native applications
- 32-bit application support with IA-32 Execution Layer

Operating System Choice



- Windows*, Linux*, Unix*, & VMS support

**Industry Standard Architecture
Choice that You don't Get with RISC**



Industry Leaders Spearhead New Itanium® Solutions Alliance



New alliance is focused on accelerating application porting and solutions momentum for Itanium platforms



ITANIUM[®] SOLUTIONS

A L L I A N C E

- **Itanium Solutions Center Network**
 - Suite of global porting centers for developers
 - Test drives open now, more coming
- **Itanium Solutions Catalog**
 - Customizable list of Itanium solutions
 - Expected by end of 2005
- **Alliance sponsored events**
 - Alliance Developer Days in US, Japan, and Germany
 - November through February
 - IDC Webcast – October
 - Industry events worldwide – through November





Summary

Complimentary architectures

- *Intel® Itanium® 2 processor for the most demanding applications*
- *Intel® Xeon™ processor for front end to mid-tier enterprise and workstation*

Compelling Itanium architecture roadmap

- *Up to 2X greater performance with dual core Montecito¹*
- *Advances in virtualization, reliability, and more*

Strong industry momentum for Itanium architecture

- *Adopted by 55 of the Global 100*
- *Over 4400 applications now, 5500 expected by year end*

Itanium architecture continues to advance and grow



¹ Comparison relative to the current generation Itanium 2 processor.
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